

STRYKER VISUM™ SURGICAL LIGHT & STRYKECAM™ IN-LIGHT CAMERA

OPERATIONS AND MAINTENANCE GUIDE



This Operations and Maintenance Guide contains confidential information that shall not be disclosed or duplicated for any reason other than to use and maintain a Stryker Visum™ Surgical Light and StrykeCam™ In-Light Camera. This restriction does not limit the right to use information contained in this guide if it is obtained from another source without restriction. The information subject to this restriction is contained in all pages of this guide.



Communications



***Stryker Visum™ Surgical Light & StrykeCam™ In-Light Camera
Operating and Maintenance Guide
Part # 1004-400-058 Rev B
Dated June 2005***

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WARNINGS AND CAUTIONS

Please read this guide and follow its instructions carefully. The words **WARNING**, **CAUTION**, and **NOTE** carry special meanings and should be carefully reviewed:

WARNING The personal safety of the patient may be involved. Disregarding this information could result in injury to the patient.

CAUTION Special service procedures or precautions must be followed to avoid damaging the instrument.

NOTE Special information to make maintenance easier or important information clearer.

TO AVOID POTENTIAL SERIOUS INJURY TO THE USER AND THE PATIENT AND/OR DAMAGE TO THIS DEVICE, THE USER MUST:

1. Read this operating guide thoroughly, and be familiar with its contents prior to using this equipment.
2. Be qualified medical personnel, having complete knowledge of the use of this equipment.
3. Test this equipment prior to a surgical procedure. This product was fully tested at the factory before shipment.
4. Avoid removing covers on the product to avoid electric shock.
5. Attempt no internal repairs or adjustments unless specifically instructed to do so in this operating guide.
6. Pay close attention to the care, cleaning, sterilization, and disinfection instructions in this guide. A deviation may cause damage. **DO NOT STERILIZE OR DISINFECT THE CONTROL UNIT OR THE TOUCH PANEL DISPLAY.**
7. Disconnect the unit from the electric outlet before inspecting system components.
8. Read the entire instruction guide before assembling or connecting the unit.

The warranty on this product is void if any of these warnings are disregarded.

Stryker accepts full responsibility for the effects on safety, reliability, and performance of the equipment only if:

- Readjustments, modifications, and/or repairs are carried out by persons authorized by Stryker and
- The electrical installation of the relevant operating room complies with the applicable IEC, CEC, and NEC requirements.

WARNING Use of this device is restricted to use by or on the order of a physician.



An exclamation point within a triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the product.



Three curvy lines within a triangle is intended to warn the user of the presence of hot surfaces. Use caution when handling hot surfaces.



A lightning bolt within a triangle is intended to warn of the presence of hazardous voltages. Refer all service to authorized personnel.



A yellow box with a hand within a triangle is intended to warn the user of the presence of an electrostatic sensitive device. Follow ESD prevention procedures.



Denotes compliance to European Community Directive 93/42/EEC



Denotes compliance to CSA Standard 622.2, 60601.1 - M90



Denotes compliance to CSA Standard 622.2, 60601.1 - M90, AS 3200, IEC 60601, IEC 60601-2-41

SAFEGUARDS & PRECAUTIONS

Incorrect operation and negligence of safety measures may cause serious incidents. Please thoroughly read the Stryker Visum™ Operations and Maintenance Guide.

Do not add additional weight on the surgical lights.

The light is not intended for operation in areas where there is danger of explosion.

Do not place anything over the hoods of the surgical lights.

CAUTION The bulb may be hot. Please allow the bulb to cool before replacing.

Do not look directly into the surgical light while powered on.

The distance between the light emission surface area of the operating light and the patient surface should not be less than 24 inches (610mm) in order to ensure proper illumination.

The surgical light must not be operational if any component of the light, i.e. glass or filter, is damaged.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

WARNING - Oxygen Explosion!



Oxygen forms explosive mixtures with oils, greases, and lubricants. The compressed oxygen presents an explosion hazard.

STRYKER VISUM™ SURGICAL LIGHT

INDICATIONS FOR USE

The intended use of the Stryker Visum Surgical Lighting System is to illuminate the operative site during surgical procedures with high intensity light.

AN INTEGRATED SURGICAL LIGHT FOR YOUR iSUITE OPERATING ROOM™

The Stryker Visum surgical light is designed to eliminate shadows, provide a large depth of field, and reduce unwanted radiant heat. Light functions can be controlled from a wall mounted control panel in the O.R., through the Stryker SIDNE™ voice activation platform, or through future Stryker touchpanel control devices.

The lightheads are fixed to a ceiling mounted, single point suspension support. They can be rotated, swiveled and tilted in any direction. The height is adjusted via the 360° rotating vertical spring arm. The spatial position of the lightheads are adjusted through rotating horizontal arms.

STRYKECAM™ IN-LIGHT SURGICAL CAMERA

INDICATIONS FOR USE

The intended use of the StrykeCam In-Light Surgical Camera System is to monitor and record the operative sight during a surgical procedure.

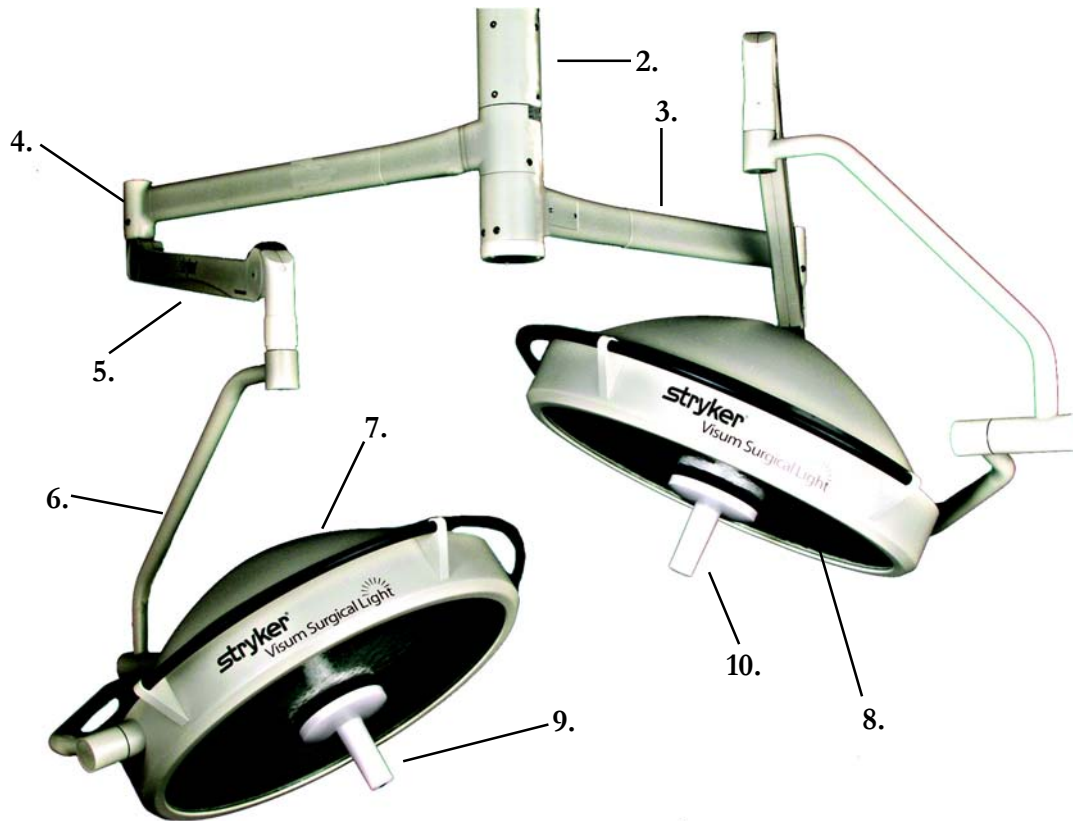
AN INTEGRATED SURGICAL CAMERA FOR YOUR iSUITE OPERATING ROOM™

The Stryker Visum surgical light can be ordered with an optional integrated Stryker camera system. The camera system can be installed in one of the lightheads in a dual system in the future with minimal effort. Each dual wall control unit comes standard with a microprocessor for future camera addition.

The Stryker camera system allows the surgical staff to record or display the various phases of a surgical procedure for documentation or teaching purposes. In the Stryker system the camera is an integral part of the light handle assembly in the center of the surgical light. The surgeon can manipulate the camera via a sterile handle that covers the camera head.

The use and characteristics of the Visum light are unvaried whenever a camera is used. The light field width cannot be adjusted when the camera function is being used. Use and installation of the camera system are illustrated separately in the “Operating Instructions” camera system.

SYSTEM COMPONENTS



SYSTEM COMPONENTS

1. Ceiling cover (not pictured) connected to the top of ceiling tube
2. Down Tube
3. Horizontal arm #1
4. Horizontal arm #2
5. Spring arm
6. Cardanic suspension
7. Hood
8. Light facing
9. Sterilizable handle
10. Light handle assembly

The light on the upper horizontal arm is Light #1. The optional StrykeCam, in-light camera, will be placed in Light #1.

The light on the lower horizontal arm is Light #2.

SAFETY

The Stryker Visum™ surgical lighting system is available in single and dual light head configurations. Two and three lightheads in a surgical suite provide safety for the patient due to the qualities of the reflector providing light from hundreds of different angles. Stryker Visum™ lightheads provide maximum protection against light failure through their redundant bulb mechanism. This safety is increased when they are connected to an emergency power supply, in addition to the mains supply. Various combinations of the Visum lights can be used by all surgical specialties in any area of the hospital where high-quality surgical light is needed.

THE TOUCHPANEL INTERFACE: SURGICAL LIGHTING

All controls for the Visum Lights and in-light camera can be accessed by the control panel located near the Documentation Station.

Controls:

On: press ON/OFF button

Off: press ON/OFF button

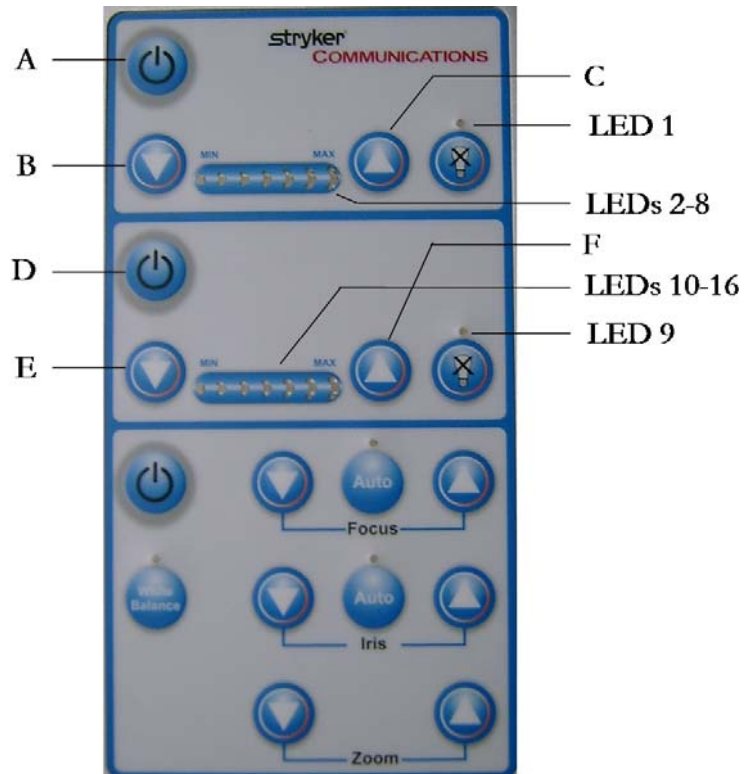
Intensity Up: press and hold “Brighter” button

Intensity Down: press and hold “Dimmer” button

Indicator:

Reserve bulb indicator: lights up when light is running on reserve bulb.

The camera controls are explained on Page 12.



- A: Light 2 ON/ OFF
- B: Brightness Light 2 Dimmer
- C: Brightness Light 2 Brighter
- D: Light 1 ON / OFF
- E: Brightness Light 1 Dimmer
- F: Brightness Light 1 Brighter

- LED1: Light 2 reserve bulb indicator
- LED2..8: Brightness indicator Light 2
- LED9: Light 1 reserve bulb indicator
- LED10..16: Brightness indicator Light 1

INSTALLATION AND START UP

INSTALLATION INSTRUCTIONS

Mounting and installation of the Stryker Visum™ lights must only be performed by Stryker employees or by authorized Stryker personnel. The installation of lights on the ceiling of the operating room must be performed in accordance with Stryker's mounting instructions due to weight and high torque.

Incorrect assembly of the lights can result in ceiling anchorage damage and the light falling down, critically injuring the patient and operating staff in the process. The on-site electric installation must be performed in accordance with IEC 60364-710 and include a fuse protection as well as a mains switch for a simultaneous all-pole separation of the light. For further information, please refer to the Stryker Pre-installation Guide.

PRIOR TO USE

The surgical staff can begin to use the light after Stryker:

- A) has carried out a performance check at the place of operation and
- B) has in-serviced the end users on the use of the lights.

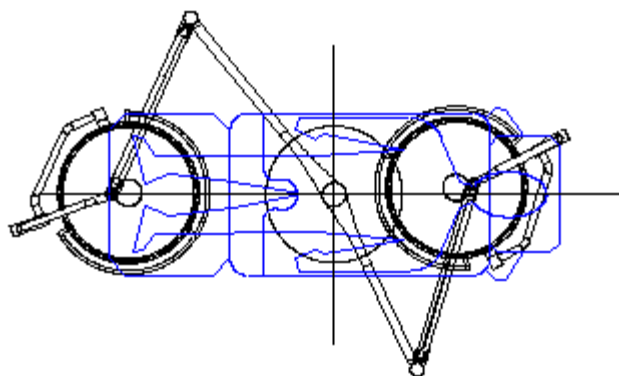
ADJUSTING THE FIELD DIAMETER SIZE

Adjustments to the size of the light field at the surgical site can be made by turning the light handle. Turn the handle in the clockwise direction to make the light field larger. Turn the light handle counterclockwise to make the light field smaller. The ideal person to determine the correct size of the light field is the surgeon or the scrubbed-in surgical technician. Match the size of the light field to the size of the surgical field so that the light illuminates roughly one inch on either side of the incision. This will allow the surgeon and other sterile personnel in the field to see properly. When the user has reached either the smallest light field or the largest light field, the light handle will click.



POSITIONING THE LIGHTS

Before starting the case, place the surgical lights in the ideal initial position so that they can be easily maneuvered around the table by sterile personnel during the procedure. Position one light at the head of the table and one at the foot, along the medial line of the patient. Keep the two horizontal arms directly opposite each other (as shown in the diagram) with the cardanic suspension to the outside. Keep the light facing approximately one meter (39 inches) from the operative site for ideal shadow resolution and depth of field. Non-sterile personnel may use the rails on the side of the lightheads to position the lights. Surgeons or other sterile personnel should use the light handle in the center of the light to move the lightheads.



TYPICAL INITIAL POSITIONING

WARNING Prolonged exposure to lamp light may intensify or accelerate wound drying



ATTACHING THE CAMERA HEAD

The top light (“1”) is your camera ready light.

1. Remove the light cover from the light handle assembly.
2. Remove the light handle assembly from the light.
3. Turn the light head vertical so that the light facing is perpendicular to the floor.
4. Align the connector of the handle with that of the light head and insert into the light head.
5. Tighten the three set screws.
6. Place the camera handle cover on to the camera head.

WHITE BALANCE

WHITE BALANCE is used to correct slight color differences caused by varying light conditions. Turn on surgical light and point camera at clean white surface. Look at the monitor and make sure that no glare is visible off of the white surface. Ensure that the white surface fills the entire screen before white balancing.

Press and hold the WHITE BALANCE button until the LED begins flashing. Continue pointing the light and camera at a clean, white surface until the LED stops flashing.



Note: Only monitors approved according to IEC 60601-1 must be used in conjunction with StrykeCam.

AUTO FOCUS

Auto focus maintains picture clarity as the lights are repositioned closer or further from the surgical site.

IRIS

The Iris setting automatically adjusts the brightness of the video picture in response to varying light levels without using the up or down buttons. When set on Auto Iris and the intensity of the surgical light is either increased or decreased, the camera will automatically adjust.

THE TOUCHPANEL INTERFACE: IN-LIGHT CAMERA

All controls for the Visum Lights and in-light camera can be accessed by the control panel located in or near the Documentation Station.

Controls:

On: press ON/OFF button

Off: press ON/OFF button

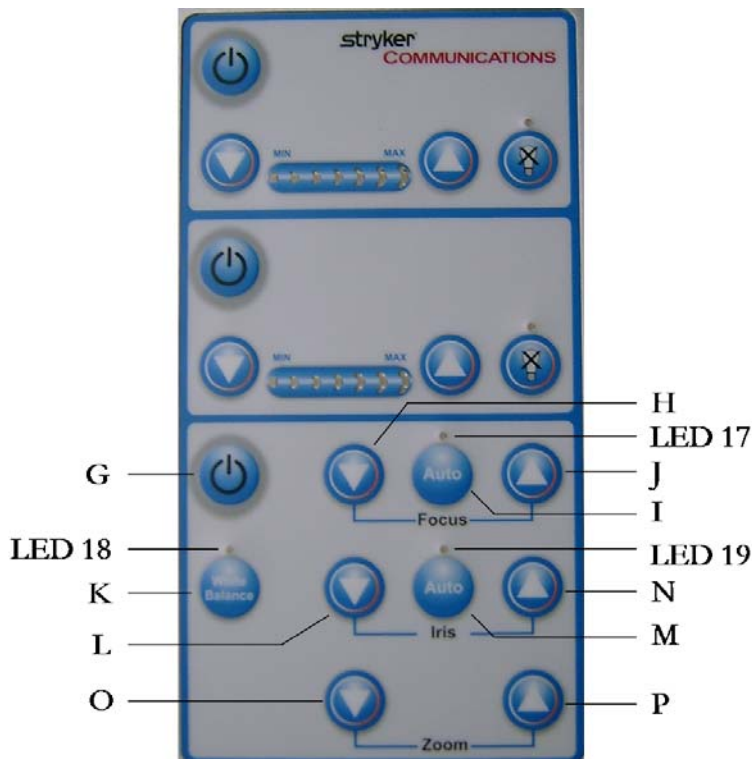
White Balance: press “White Balance” button and wait until the light stops flashing.

Focus: press and hold “Auto” button for Auto Focus. LED will light up in “auto”. The up and down arrows are available for manual focus.

Iris: press and hold “Iris” button for Auto Iris. LED will light up in “auto”. The up and down arrows are available for manually setting the iris.

Zoom In: press and hold Up button.

Zoom Out: press and hold Down button.



- G: Camera ON / OFF
- H: Camera Focus down (focus out)
- I: Camera Auto Focus (**press and hold for Auto Focus**)
- J: Camera Focus up (focus in)
- K: White Balance (**press and release: when flashing light stops, camera is white balanced**)
- L: Camera Iris down
- M: Camera Auto Iris (**press and hold for auto iris**)
- N: Camera Iris up
- O: Zoom in
- P: Zoom out
- LED17: Auto Focus ON
- LED18: White Balance ON
- LED19: Auto Iris ON

CHANGING THE BULB

LIGHT BULB REPLACEMENT

Each Stryker Visum surgical light has two bulbs in the light handle assembly. One bulb is the primary bulb, while the other is the automatic reserve bulb. When the primary bulb fails, the automatic reserve bulb moves into position with 100% power and an identical field. The reserve bulb indicator on the wall control panel will illuminate to let the user know to change the bulb.

Each bulb is rated at 1000 hours: roughly three months of use in an average operating room. When the primary bulb fails in your Visum surgical light, please change the bulb at the end of the day or between cases. This way, you will always benefit from the safety of the automatic reserve bulb.

PREPARATION

Prior to changing the bulb, the power to both lights must be turned off.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.



WARNING:

The bulb may be hot. Please allow the bulb to cool before replacing to avoid burns.

Once the power is turned off, return to the light that is on reserve bulb. Proceed in the following manner:

1. Pull the lighthead as close to the ground as possible.
2. Turn the light so that the light facing is pointed towards the ceiling.
3. Remove the light handle cover.
4. Loosen the three knurled screws.
5. Remove the light handle assembly, making sure the lighthead does not rise when the weight is removed.



CHANGING THE BULB

REMOVING THE BULB

The reserve bulb will now be in the center of the light handle assembly and the burned out primary bulb will be to one side. The burned out bulb will most likely have a broken filament.



1. While holding the light handle assembly in one hand, remove the burned out bulb and discard.
2. Remove the porcelain bulb holder by removing the two screws with the screwdriver provided in the bulb package.
3. Replace the porcelain bulb holder and tighten the two screws.
4. Unwrap the new bulb and expose the two prongs.



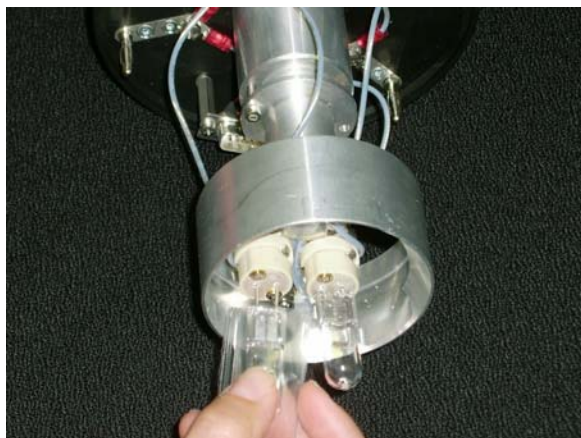
CAUTION: Do not touch the halogen bulb with your bare fingers. If you do, clean off the oils with a tissue.

REPLACING THE BULB

Using the bulb's plastic wrapper as a holder, replace the bulb in the following manner:



NOTE: Replacement bulbs may only be purchased from Stryker. Refer to the Re-Order page for more information.



1. While holding the light handle assembly close to your eyes, line up the two bulb prongs with the two holes on the holder.
2. Remove the porcelain bulb holder by removing the two screws with the screwdriver provided in the bulb package.
3. Once lined up, gently insert the prongs into the holes.
4. Using the base of the bulb as leverage, firmly push the bulb into place. Discard the plastic wrapper.
5. Looking at the light from the side, line up the two Sub-D connectors.
6. Place your hand on the hood and insert assembly into lighthead.
7. Tighten the three knurled screws.
8. Turn on the light to make certain the new bulb is functioning properly.

ATTACHING THE STERILIZABLE LIGHT HANDLE COVER

ATTACHING THE STERILIZABLE LIGHT HANDLE COVER

1. Align sterile handle and black part of light handle assembly.
2. Push sterile handle onto light handle assembly.
3. Turn clockwise until hear audible “click”.
4. Sterile cover is now fixed in place.
5. To remove, push up on center button of light handle and remove.



Note: if a handle is contaminated during a case, immediately have the circulating nurse remove that light handle cover. Have an extra handle sterilized for all cases in the event the handle becomes contaminated.





CLEANING AND DISINFECTING

All parts of the Visum light can be cleaned and disinfected with standard medical grade cleaners on all of its exterior surfaces including the control unit.

CLEANING AND STERILIZATION OF THE REUSABLE HANDLES



Warning: Handles are shipped non-sterile. Please clean and sterilize handles prior to use.

Cleaning:

1. Rinse handle under running lukewarm water, flushing water through all passages.
2. Submerge entire handle in an enzyme action detergent prepared according to the manufacturer's recommendations. Remove debris and bioburden from all surfaces using a soft brush.
3. Rinse handle thoroughly under running lukewarm water, flushing water through all passages.
4. Dry handle with a lint free cloth.

Sterilization:

The following sterilization methods have been validated in accordance with AAMI TIR 12 (1994) Annex B:

Gravity-displacement steam sterilization (wrapped)



Temp: 121°C

Exposure time: 25 minutes

Pre-vacuum steam sterilization (wrapped)



Temp: 134°C

Exposure time: 4 minutes

Gravity-displacement steam sterilization (unwrapped)



Temp: 132°C

Exposure time: 10 minutes

Pre-vacuum steam sterilization (unwrapped)



Temp: 134-137°C

Exposure time: 4 minutes

When filling the autoclave, ensure that the open sides of the handles are facing down. Make certain the handles are not touching any other items while being sterilized.



Note: All handles shall be inspected before and after use. If damage is found in any area the handle should be discarded.



Note: Reusable handles are subject to natural wear. Cleaning methods affect the life of the handle.

VERIFICATION PROCEDURE

EMERGENCY POWER USAGE

VERIFICATION PROCEDURE

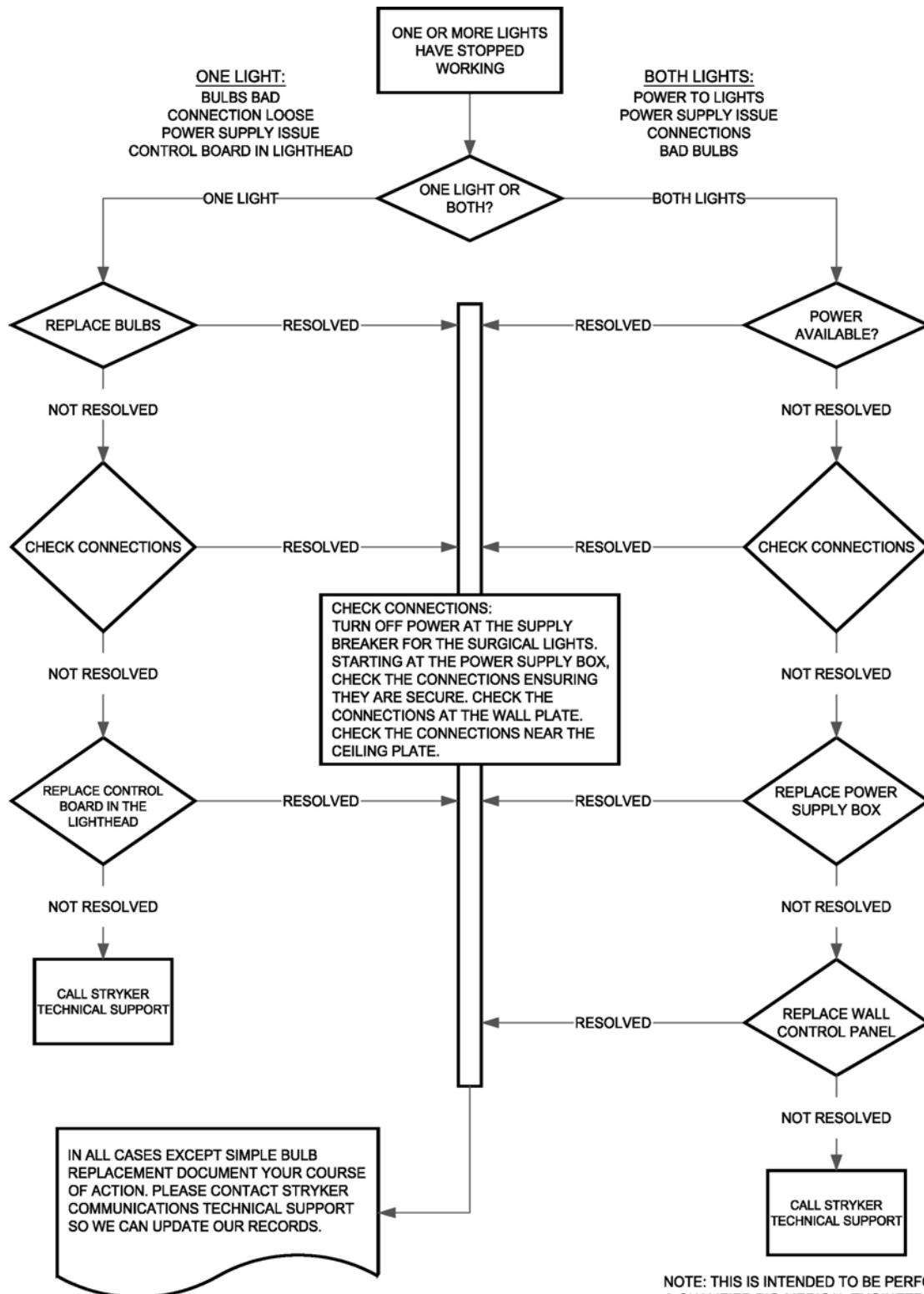
European Union customers will have power supply boxes equipped with a 24 V DC inlet for emergency power backup in case of mains power loss. When the mains power loss occurs, the light system will blink off momentarily and back on again within 5 seconds. This blink indicates the switch over to emergency power.

If your facility does not have an alarm to notify the user that emergency power is engaged, perform the following steps:

1. Locate power supply box
2. Unplug power cord from wall outlet



Note: If the lights do not blink, the light system is operating off of emergency power



NOTE: THIS IS INTENDED TO BE PERFORMED BY EITHER A QUALIFIED BIO-MEDICAL ENGINEER OR A STRYKER COMMUNICATIONS FIELD SUPPORT ENGINEER.

NOTE: FOR SPECIFIC INFORMATION ON EACH STEP REFER TO THE STRYKER VISUM SERVICE MANUAL.

IF BOTH LIGHTHEADS ARE DOWN

First, make sure there is power to the power supply box. If the lights are still not working, then check the connections, wall control box, and the power supply box.

Checking Your Connections

1. Turn off breaker that supplies power to the surgical lights.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

2. Starting with connections at power supply box, check all connections and make certain they are secure.
3. Check all connections near ceiling plate of light. Are they all secure?
4. Check all connections at wall control panel.

Turn on breaker and see if lights come on. If not, move to “Replacing the Wall Control Panel.” Contact Technical Support at 1-866-841-5663 for any needed replacement parts.

Replacing the Wall Control Panel

1. Turn off breaker that supplies power to the surgical lights.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

2. Turn off mains switch on power supply box.
3. Disconnect the wall control cables from the power supply box.
4. Remove the four screws that hold the wall control panel in place and place them in a safe location.
5. Remove wall control panel and disconnect two connectors.
6. Replace wall control panel and reconnect the two cables.
7. Reconnect the two cables at the power supply box.
8. Turn the breaker on.
9. Turn on the lights and see if they come on. If not, move to “Replacing the Power Supply Box.”

Replacing the Power Supply Box

1. Turn off breaker that supplies power to the surgical lights.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

2. Turn off mains switch on power supply box.
3. Unplug the power supply box.
4. Remove all the cables connected to the power supply box.
5. Remove current power supply box.
6. Insert new power supply box.
7. Reconnect all the cables.
8. Plug in the power supply box.
9. Turn on the mains switch.
10. Turn on breaker that controls the surgical light.

Turn on the lights and see if they come on.

IF ONE SINGLE LIGHT IS DOWN

First, verify that there is power at the main supply box.

Bulbs

If there is power at the wall control panel and the reserve bulb indicator is lit, it is possible that both the primary and reserve bulb in the light are defective. Check both the primary and reserve bulbs of the non-working light. Replace both bulbs if they are burned out and see if the light turns on.

Connections

1. Turn off breaker that supplies power to the surgical lights.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

2. Starting with connections at power supply box, check all connections and make certain they are secure.
3. Check all the connections near ceiling plate of light. Verify that they are all secure.
4. Check all connections at the wall control panel.

Turn on breaker and see if the light comes on. If not, move to “Replacing the Control Board.” Contact Technical Support at 1-866-841-5663 for any needed replacement parts.

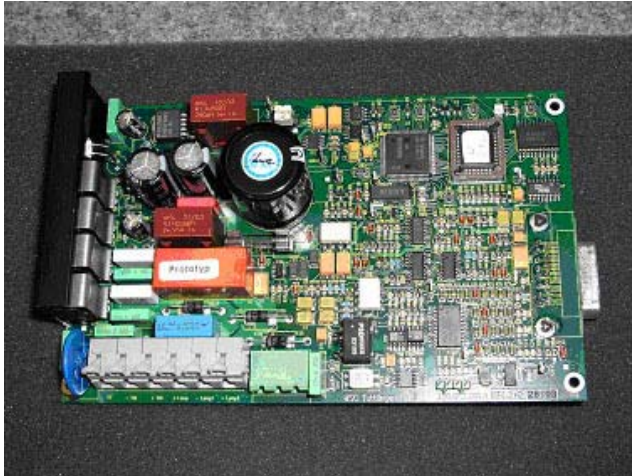
Replacing the Circuit Board in Light Head

1. Turn off breaker that supplies power to the surgical lights. Unplug power cord to the power supply box.



If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.

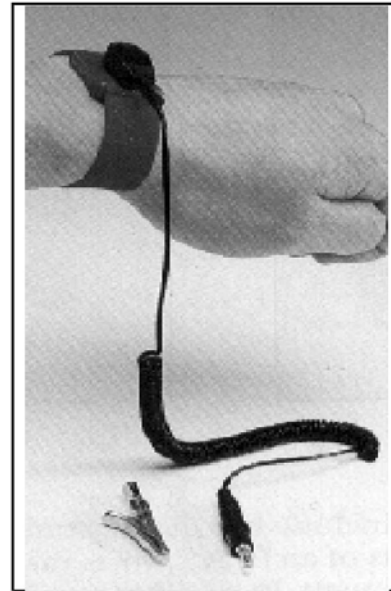
2. Pull lightheads as close to the floor as you can.
3. Carefully peel back black gasket and uncover the screws.
4. Remove the screws and place them in a safe place.
5. Remove hood being careful that the spring arm does not carry the lighthead up when the weight changes from removing the hood.
6. If light is camera ready, there are two boards inside. The light board looks like this:



Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It occurs when electronic printed circuit boards are improperly handled and can result in complete or intermittent failures.



Always follow ESD prevention procedures when removing and replacing boards. Ensure that the lighthead is electrically connected to earth ground. Wear an ESD-preventive wrist strap (see picture on this page), ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to safely channel unwanted ESD voltages to ground. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the lighthead.



ESD-Preventive Wrist Strap

7. Remove the light control board and replace it with a new board. Make sure all connections are secure.
8. Replace the hood, screws and rubber gasket. Power up the light and see if this corrects the problem.



WARNING:

Avoid touching the light circuit board with an open hood and power applied as this may result in electric shock.

If the light works, contact Technical Support at 1-866-841-5663 for an RMA number to send the defective board to Stryker.

If none of the solutions above work, contact Stryker Technical Support.

IF THE LIGHT DRIFTS

From the top down, adjust the brakes in the following order:

1. Top horizontal arm
2. Bottom horizontal arm
3. Spring arm
4. Both cardanic suspension screws

The goal when adjusting the brake screws is to make certain the lights are easy to move, yet they stay in place when positioned. Check with your Technology Consultant or Project Manager when adjusting the brakes.

Setting the Horizontal Arm Brakes

1. To increase brake force turn slotted screw in.
2. Set the brakes to prevent drift, but so they can still be easily moved.



To set the two horizontal arms, pull each one all the way extended so that both arms are in a straight line and you are looking down that line. You should be able to move the lower (spring) arm before the upper arm “breaks”. If not, tighten the slotted screw on the upper arm until you are able to do this. Also, when fully extended, the arms should not move. If they do move, tighten the slotted screws.

Spring Arm

The test for the spring arm brake is as follows:

1. If you push the lighthead all the way to the ceiling, it should stay there and not come down when you remove your hand. If it does come down, you must increase the spring tension.
2. If you pull the lighthead all the way to the floor, it should not drift up towards the ceiling. If it does, you must decrease the spring tension.
3. Test the lighthead in three positions: at the top, in the middle, and at the bottom. Make certain that it remains in place in all three positions.



SERVICE / TROUBLESHOOTING

To increase or decrease the spring tension, use the 5mm hex key. At the rear (proximal) of the spring arm, there is a hole where the wrench will fit. It is easier to insert the wrench and find the tension screw when the spring arm is pushed slightly up. To tighten the tension (and stop the lighthead from drifting down), turn the screw clockwise. To reduce the tension (and stop the lighthead from drifting towards the ceiling), turn the screw counterclockwise.



Cardanic Suspension

There are two 5mm socket head screws on the cardanic suspension to tighten and loosen the tension. You should be able to do easy figure eights with the lighthead using only one hand if the screws are set properly. If not, loosen the screws a small amount and continue to try the figure eights.

Once you have made the light heads easy to move, test to see if the cardanic screws are set tightly enough. Rotate the lighthead on its side and see if it drifts. If so, tighten the screw. Turn the lighthead the opposite direction and tighten if necessary.



LIGHTING DATA VISUM

Central illuminance at a defined distance, electrically dimmable from/to	45 - 100 %
Central illuminance at a defined distance (per light field adjustment)	60.000 - 135.000 lx
Focusable size of light field d10 at a distance of 1 m	150 - 240 mm
Focusable size of light field d50 at a distance of 1 m	83 - 165 mm
Color temperature [K]	4.200
Color rendering index [Ra(1-8)]	93
Red rendering index [R9]	ca. 70
Total irradiance (at 100,000 lx) [W/m²]	345
Heat radiation > 700 nm (at 100,000 lx) [W/m²]	33
Infrared heat radiation > 780 nm (at 100,000 lx) [W/m²]	5
Luminosity factor of radiation [lm/W]	287
Illumination depth without refocusing (L1 / L2)	300 / 760 mm
Brightness of back-up light in %	100
SHADOWINESS: residual illumination with 1 shadow-caster [%]	37
SHADOWINESS: residual illumination with 2 shadow-casters [%]	48
SHADOWINESS: residual illumination with 1 tube [%]	100
SHADOWINESS: residual illumination with tube and 1 shadow-caster [%]	40
SHADOWINESS: residual illumination with tube and 2 shadow-casters [%]	45.5
Laminar-flow index acc. to Leeneman	31
Laminar-flow index acc. to Oostlander	34

MECHANICAL DATA VISUM

Minimum room height (transformer on flange/at a headroom of 2200 mm)	2950 mm
Minimum room height (transformer in switchbox/ headroom of 2200 mm)	2850 mm
Operating range	1660 mm
Height adjustment of spring-loaded arm	1190 mm
Diameter of reflector/light exit opening	560/560 mm
Highest position of light housing at a headroom of 220 cm	2260 mm
Diameter of ceiling anchor plate	380 mm
Lowest position of light housing at a headroom of 220 cm	1070 mm
Force required to move light up/down	14 N
Weight	136 kg
Max load capacity of spring arm	21 kg
Max load capacity of horizontal suspension	45 kg

OPERATING & STORAGE CONDITIONS

Operating Conditions:	41° F to 100° F (5°C to 38°C); 10% to 95% relative humidity, no condensation; 20.7 inHg to 31.3 inHg (700hPa to 1060 hPa)
Storage Conditions:	0° F to 150° F (-18°C to 66°C); 10% to 95% relative humidity, no condensation; 20.7 inHg to 31.3 inHg (700hPa to 1060 hPa)

STRYKECAM SPECIFICATIONS

PHYSICAL & ELECTRICAL

CCD sensor:	1/4" Interline CCD with integrated mosaic filter
Pixel/effective pixels:	768 (H) x 494 (V)
Video Format:	NTSC
Resolution:	470 lines
White-set:	5700K or manual
Signal to Noise Ratio:	< 50 dB
Min. illumination:	< 1 lx at F1.4
Lens:	30 x Zoom (combined)
Features:	Automatic iris, automatic focus, automatic white balance, < 95% relative humidity
Power Supply:	Through light / max. 12 Watt
Video Output:	S-Video and Composite
Control:	RS 232, TCP/IP, and Touchpanel on wall control

OPERATING & STORAGE CONDITIONS

Operating Conditions:	32° F to 122° F (0°C to 50°C); 10% to 95% relative humidity, no condensation; 20.7 inHg to 31.3 inHg (700hPa to 1060 hPa)
Storage Conditions:	-4° F to 140° F (-20°C to 60°C); 10% to 95% relative humidity, no condensation; 20.7 inHg to 31.3 inHg (700hPa to 1060 hPa)

VISUM MAINTENANCE SCHEDULE

VISUM™ LIGHT MAINTENANCE SCHEDULE

Check lamp on/off switch	Semiannual
Check maximum intensity of illumination at a distance of 1 m with small luminous field	Quarterly
Check maximum voltage of the bulb	Semiannual
Intensity adjustment.....	Semiannual
Lamp body: check that the hood support screws are properly tightened	Quarterly
Lamp body: check the condition of the cable comb	Semiannual
Reserve bulb change	Quarterly
Light handle assembly	Semiannual
Brakes (clutch-type brakes)	Quarterly
Tension of the support arm springs	Quarterly
Support screws of the central positioning shaft / tighten the ceiling tube (min. 204 in-lb (23 Nm))	Annual
Check the means of illumination (the original STRYKER halogen bulb: Voltage, Watts)	Annual
Check the contacts of the bulb supports	Semiannual
Check the power feed cables of the bulb supports	Semiannual
Check the reflectors of the halogen bulbs	Semiannual
Check heat filter glass	Semiannual
Check the collector ring and the strip contacts	Semiannual
Align the flanged tube	Semiannual
Eliminate or cover scratches and damage to the paintwork	Annual
Check the closing mechanism of the replacement holders	Semiannual
Rubber seals	Annual
Measure the resistance of the security conductor (compliance with VDE standards)	Annual
Check commutation to emergency current	Semiannual



Note: All Maintenance should be performed by Stryker personnel or their customer designate.

MAINTENANCE, SERVICE, CLAIMS, & WARRANTY

FUSE REPLACEMENT

The fuse should be replaced by either Biomedical personnel or authorized Stryker personnel.

WARNING: To avoid the risk of fire, replace only with a fuse of the value specified on the fuse label on the back of the unit.

If the Light System is equipped with a StrykerVision™ Flat Panel, both power sources must be removed prior to servicing. Detach power supply box from AC outlet to disengage power to Light System. Turn off the StrykerVision™ circuit at circuit breaker.



DISPOSITION OF THE PRODUCT

The device must be disposed of according to local laws and hospital practices. The device does not contain any hazardous materials.

SERVICE

If service is needed either during or after the warranty period, contact Technical Support (1-866-841-5663) or your Stryker representative.

DAMAGE CLAIMS

Shipping is FOB Origin. Title transfers to customer upon shipment. Stryker assumes responsibility for loss or damage during shipping. Please contact Technical Support (1-866-841-5663) or your Stryker representative if your shipment is lost or damaged.

If you need to return any item, contact Customer Service for an RMA number. After receiving an RMA number, package the item as described by Customer Service. Ship the item to the following address:

Stryker
(RMA# _____)
1410 Lakeside Parkway, #100
Flower Mound, TX 75028
Toll Free: 877-789-8106

STRYKER LIMITED WARRANTY

This warranty applies to customers in the United States only. Outside of the U.S.A., contact your Stryker sales representative or your local Stryker subsidiary.

Stryker warrants that its products shall be free of defects of material and workmanship for a period of two years after date of installation. Stryker will provide all parts and service required to restore equipment under warranty to good working condition, which may include shipment of replacement parts and phone service consultation to conduct minor repairs.

Any modifications to this warranty policy are not valid unless made with explicit written approval of Stryker.

This warranty covers all Stryker products with the exception of bulbs, sterilizable handles, filters and any other disposable parts.

This warranty does not cover any cosmetic or superficial damage to product. Any modification to product by Customer without the approval of Stryker will immediately void this warranty in its entirety.

This warranty covers only Stryker products and only such products that were installed or, if necessary reinstalled by Stryker personnel.

This warranty is valid only to the original purchaser of Stryker products directly from a Stryker authorized agent. The warranty cannot be transferred or assigned by the original purchaser.



CAUTION: Never open any of the component systems incorporated in the Visum Surgical Light or in the In-Light Camera. If opened, the equipment warranty may be void.



CAUTION: All Stryker devices must be inspected once a year with regard to the following points:

Mechanical inspection:

- damage to paint
- cracks on plastic parts
- deformation of the system
- loose parts

IN-LIGHT SURGICAL CAMERA

682-000-170:	Bulbs, package of 6
682-000-180:	Handles, Regular, package of 6
682-000-183:	Handle, Camera AL, package of 3
682-000-190:	Handles, Camera, package of 6
682-000-261:	Pkg, Weighted Light Handle Assembly
682-000-276:	Pkg, Devon glove adaptor

INTERNATIONAL SERVICE

For service in the U.S.A., call your Stryker representative or Stryker Customer Service at 1-877-789-8106. Outside of the U.S.A., please contact your Stryker distributor at one of the following locations:

Stryker Corporation
2725 Fairfield Rd.
Kalamazoo, MI 49002
USA
Phone: 1-616-385-2600
Fax: 1-616-385-1996
Telex: 224464 STRYKER KMZ

Stryker Canada
3375 North Service Road
Unit C-9
Burlington, Ontario
L7N 3G2
CANADA
Phone: 905-332-3235
Fax: 905-332-7674

Stryker Deutschland GmbH
Gewerbeallee 18
D-45478 Mulheim an der Ruhr
GERMANY
Phone: 49-208-999060
Fax: 49-208-9990666

Stryker Taiwan
5F-1, 23 Pa Te Road
Section 1, Taipei,
TAIWAN, R.O.C.
Phone: 886-2-2322-2895
Fax: 886-2-2357-8543

Stryker U.K.
Hambridge Road
Newbury
Berkshire RG14 5EG
ENGLAND
Phone: 44-1635-262400
Fax: 44-1635-580300

Stryker B.V.
Marinus van Meelweg 17
PO Box 8747
5657 EN Eindhoven
THE NETHERLANDS
Phone: 31-40-2922522
Fax: 31-40-2922555

Stryker France
ZAC Satolas Green Pusignan
Av. de Satolas Green
69881 Meyzieu Cedex
FRANCE
Phone: 33-1-48175038
Fax: 33-1-48632175

Stryker Korea
11F Dong Sung Bldg. 154-24
Samsung-dong, Kangnam-ku
Seoul
KOREA 135-090
Phone: 82-2-565-7303
Fax: 82-2-552-4156

Stryker Australia
50 Broughton Road
Artarmon NSW 2064
AUSTRALIA
Phone: 61-29-439-5100
Fax: 61-29-439-6400

Stryker Pacific Headquarters
Suite 2501, Citibank Tower
Citibank Plaza
3 Garden Road
HONG KONG
Phone: 852-2840-4400
Fax: 852-2804-6303

INTERNATIONAL SERVICE

Stryker Malaysia
No. 55, Lorong Rahim Kajai 13
Taman Tun Dr. Ismail
60000 Kuala Lumpur
MALAYSIA
Phone: 60-3-7725-3650 / 3651
Fax: 60-3-7725-5228

Stryker Singapore (ASEAN)
70 Bendemeer Road
#03-32 Hiap Huat House
SINGAPORE 339940
Phone: 65-293-0119
Fax: 65-293-7028

Stryker Osteonics, SA
Via della Posta, PO Box 254
6934 Bioggio
SWITZERLAND
Phone: 41-91-610-4410
Fax: 41-91-610-4421

Stryker India
India Liaison Office
First Floor, 94 Uday Park
New Delhi 110049
INDIA
Phone: 91-11-686-2567
Fax: 91-11-651-5496

Nippon Stryker K.K.
25-3 Yoyogi 3-Chome, Shibuya-ku
Tokyo 151-0053
JAPAN
Phone: 81-03-5352-9211
Fax: 81-03-5352-9204

Stryker China
Room 1710, Kodak House
39 Healthy Street East
North Point
HONG KONG
Phone: 852-2814-7463
Fax: 852-2873-0210
Stryker Europe Headquarters
Cite-Centre, Grand Rue 92
CH-1820 Montreux
SWITZERLAND
Phone: 41-21-966-5201
Fax: 41-21-966-5200

Stryker Latin America
Plaza Royale Suite 304
15600 NW 67th Ave.
Miami Lakes, Florida 33014
USA
Phone: 1-305-821-1888
Fax: 1-305-826-0067

Stryker Middle East / Africa
1404 Al Masaoud Bldg. Suite 604
Hamdan Street
Abu Dhabi
U.A.E.
Phone: 9712-312145
Fax: 9712-313698

Stryker Mexico, S.A. de C.V.
Montecito No. 38
Piso 12, Oficina 31
Colonia Napoles
MEXICO 03810
Phone: 525-488-0890
Fax: 525-488-0891

MANUFACTURER

Stryker
1410 Lakeside Parkway #100
Flower Mound, TX 75028
Toll Free: 1-877-789-8106
E-mail: comm.support@stryker.com



Communications

1410 Lakeside Parkway #100 Flower Mound, TX 75028

*Stryker Visum™ Surgical Light &
StrykeCam™ In-Light Surgical Camera
Operations and Maintenance Guide
Part # 1004-400-058 Rev B*